

Note

The puzzle of *Eucalyptus hemilampra* F.Muell. (Myrtaceae)

Introduction

Ferdinand Mueller made many hundreds of collections of plant species from all families while he was botanist for the Gregory expedition to northern Australia in 1855–56. Not surprisingly, most of Mueller's collections were of undescribed species, which were described in his *Fragmentae Phytographiae Australiae*, but the eucalypts he treated separately in a monograph. His important paper on tropical and subtropical eucalypts, describing many new species, was published in 1858. Among them was *Eucalyptus hemilampra*, collected in December 1856, during the very last stages of the expedition as it approached Brisbane.

The expedition's route through south-eastern Queensland included Boondooma, Taabinga, Nanango, Colinton, Kilcoy and Caboolture (Gregory & Gregory 1884), and then to Brisbane. *E. hemilampra* was supposedly collected 'at woodland rivulets and torrents along parts of the upper Brisbane River' (Mueller 1858). Mueller (l.c.) stated that *E. hemilampra* has smooth bark, and that the tree is similar to *E. tereticornis*.

Bentham (1867) allied *E. hemilampra* with the rough-barked *E. resinifera* Sm., making it a synonym of his new variety *E. resinifera* var. *grandiflora* Benth., which he based on Mueller's collection and two others from the Sydney area.

The affinity suggested by Bentham obviously did not sit well with Mueller, for in his 'Eucalyptographia' (Mueller 1879), he considered *E. hemilampra* to be a variety of *E. saligna* Sm., again emphasising that *E. hemilampra* is a smooth-barked taxon.

All other subsequent botanists followed Bentham's opinion by submerging *E. hemilampra* under *E. resinifera*. Maiden (1917) synonymised *E. resinifera* var. *grandiflora* (and hence *E. hemilampra*) with

E. resinifera. Domin (1928) reinstated the taxon as *E. resinifera* var. *hemilampra*, Chippendale (1988) again made it a synonym, while Johnson & Hill (1990) accorded the taxon subspecies rank, as *E. resinifera* subsp. *hemilampra*.

The puzzle

Because Mueller's protologue for *E. hemilampra* described the tree as smooth-barked (*E. resinifera* is rough-barked), and because there is no known occurrence of *E. resinifera* anywhere in the upper reaches of the Brisbane River, I decided that the matter needed further investigation.

If the bark character is ignored, the description in the protologue matches *Eucalyptus resinifera* well. However, it also matches *E. longirostrata* (Blakely) L.A.S. Johnson & K.D. Hill, a smooth-barked "Grey Gum" tree common in the Blackbutt-Benarkin-Yarraman district at the upper reaches of the Brisbane River, except that the fruits of *E. longirostrata* are somewhat larger than the measurement given by Mueller.

I have received on loan, a type specimen of *E. hemilampra* from MEL (labelled as holotype). However, it is imperfect. It comprises a flowering branchlet with senescing stamens but without any fruits or opercula. High quality images recently received of a type at Kew revealed a much more complete specimen with intact buds, open flowers and some fruits in a packet. There is no doubt that the flowering specimen at Kew, and the one at Melbourne, do represent *Eucalyptus resinifera*. Some of the diagnostic features visible on one or both types are the very glossy adaxial leaf surface (not very glossy in *E. longirostrata*), the conical operculum (rostrate in *E. longirostrata*), the often 9-flowered umbels (never more than 7-flowered in *E. longirostrata*) and the stamens erect in bud (completely inflexed in *E. longirostrata*). Brooker & Kleinig (1999) have

incorrectly coded this last character for *E. resinifera*.

A further complication is that the fruits in the packet on the Kew sheet belong to *E. grandis* W.Hill, judging by their size, shape, the hint of glaucousness, the incurved exerted valves and the short pedicels.

The puzzle is this. Mueller stated that *Eucalyptus hemilampra* is a smooth-barked tree that comes from the upper Brisbane River. This indicates that the Grey Gum, now known as *E. longirostrata*, was the species Mueller originally intended as his new species. But the type specimens represent *E. resinifera*, a completely rough-barked tree, and *E. grandis*. Neither of these species occurs in the upper Brisbane River area.

The hypothesis

I believe that Mueller confused the species now known as *E. longirostrata* and *E. grandis*, and I contend that Mueller's extant collections must have been made between Caboolture and Brisbane (where both *E. resinifera* and *E. grandis* are common).

According to my hypothesis, the chain of events is as follows:

Mueller reaches the upper Brisbane River [around Yarraman and Benarkin] and sees *E. longirostrata*. He decides it is a new species and coins the name *E. hemilampra*. But due to lack of time or excessive tree height, he is unable to collect a specimen.

A few days later, he observes *E. grandis* [between Caboolture and Brisbane] and considers it to be the same species as he earlier observed [Mueller's broad species concept is amply evident in *Eucalyptographia*]. He collects fruits from the ground under the tree as it is too tall [loose *E. grandis* fruits in packet of the Kew type], and collects a windfall flowering specimen, which he believes to be from the same species [actually *E. resinifera*, which does flower in December around Brisbane, and which often grows in association with *E. grandis*; violent summer storms could easily fling small

branchlets many metres from the parent tree]. This hypothesis explains the make-up of the types at MEL and K, and explains Mueller's life-long belief that *E. hemilampra* was smooth-barked. It does not explain the lack of mention of a second collection site for *E. hemilampra*, but locality precision was not a big issue in the 1850's and Mueller probably didn't think it worthy of mention.

The protologue for *E. hemilampra* includes characters relating to the operculum and the fruits, which are present only on the sheet now at K. Hence that sheet is nominated as lectotype, and the MEL sheet as isolectotype.

There does not seem to be any firm basis for recognising *E. hemilampra* as a subspecies, as was proposed by Johnson & Hill (1990). They provided a key to the subspecies based on operculum length and peduncle length. Material from southern Queensland does seem to have longer operculae than central New South Wales material (as Johnson & Hill said), but northern N.S.W. material appears intermediate. The peduncle length character does not hold, as specimens from near Sydney have been observed to have peduncles up to 24 mm long.

Eucalyptus resinifera Sm. in J. White, John Whites Voyage 231 (1790). **Type:** New South Wales. Port Jackson, undated, *J. White s.n.* (iso: BM).

Eucalyptus hemilampra F.Muell., J. Linn. Soc., Bot. 3: 85–6 (1858); *E. resinifera* var. *hemilampra* (F.Muell.) Domin, Biblioth. Bot. 89: 468 (1928); *E. resinifera* subsp. *hemilampra* (F.Muell.) L.A.S.Johnson & K.D.Hill, *Telopea* 4(1): 46 (1990). **Type:** [Queensland.] 'upper Brisbane River', [December 1856], *F. Mueller* (**lecto:** (here chosen) K, excluding fruits in packet; **isolecto:** MEL).

Acknowledgements

I thank the director of MEL for the loan of type material of *E. hemilampra*, Peter Bostock (ABLO) for photographing the type material of same at Kew, and Laurie Jessup for assistance and discussions.

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